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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/601,358
Filing Date: June 23, 2003
Appellant(s): TASH, GEORGE

Craig S. Fischer
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 01/25/2007 appealing from the Final Office action mailed 8/25/2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

3,605,672	**STRUMBOS**	**9-1971**
6,250,890	**POPOV**	**6-2001**
3,667,069	**BLACKSHEAR ET AL.**	**6-1972**
4,963,073	**TASH**	**10-1990**

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by W. P. Strumbos (US Patent number 3,605,672).

A nozzle regulator (control apparatus 10 as shown in Figure 3 and 5, also discussed in Column 5, line 13), comprising: an outer tubular cylinder (42 and 15, shown in Figure 6) having a first radius (Figure 29); an inner tubular cylinder (Shown in figure 2, it is made of four parts 16, 17, 18 and 19) having a second radius that is less than the first radius (Figure 29) and wherein the outer tubular cylinder and the inner tubular cylinder are concentric about a longitudinal direction (Figures 3 and 5), wherein the inner tubular cylinder is made of a deformable material (...fabricated from a natural

rubber or rubber like material..., Column 5 lines 23-24) such that when acted upon by a force the inner tubular cylinder easily deforms but when the force is removed the inner tubular cylinder returns to its original shape (Column 5, lines 24-29); and an inlet section that connects the outer tubular cylinder and the inner tubular cylinder at an inlet side in the longitudinal direction (Shown in Figure 5, the arrow indicates the direction of flow of the fluid); wherein the deformable material comprises a rubber compound (Column 5 lines 23-24); wherein the entire nozzle regulator is constructed of the deformable material (42 Figure 3 and 5).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 5-7, 9 and 14 are rejected under 35 U.S.C. 103(a) as being obvious over W. P. Strumbos (US Patent number 3,605,672).

With regard to Claim 5-7 Strumbos discloses a nozzle regulator; wherein the outer tubular cylinder and the inner tubular cylinder are smoothly connected (Column 5, lines 36-40). Strumbos does not disclose the inlet section is a ring having a convergent

cross-sectional shape in the longitudinal direction; wherein the convergent cross-sectional shape is a convex curve; wherein the convergent cross-sectional shape is a straight line. Strumbos does disclose the "Kort Nozzles" and how they are a very well known prior art (Column 1, lines 55-70). Kort nozzles are significantly efficient at low speeds, producing greater thrust in a smaller package making them ideal for a nozzle regulator. Kurt nozzles have a pheripheral ring at the inlet section as disclosed by Strumbos and they also have a convergent cross-sectional shape in the longitudinal direction and the convergent cross-sectional shape is a convex curve and the convergent cross-sectional shape is a straight line in the same manner as applicant's disclosure. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the teachings of Strumbos in combination of the Kurt nozzle teachings provided by Strumbos to make the nozzle's inner cylindrical fitting of inward tapered shape to increase the efficiency of the regulator.

With regard to Claim 9 and 14, Strumbos discloses an automatically deformable nozzle regulator 10, comprising: an outer cylinder 15 having a hollow interior (Shown in Figure 2) and an inlet side and a outlet side at opposite end of the cylinder along a longitudinal direction (Shown in Figure 5, the arrow indicates the direction of flow of the fluid); an inner cylinder disposed concentrically within the outer cylinder and having a fluid passageway in the longitudinal direction such that fluid can flow through the fluid passageway from the inlet side to the outlet side (Shown in figure 2, it is made of four parts 16, 17, 18 and 19); wherein the automatically deformable nozzle regulator is constructed of a deformable material; wherein the deformable material comprises

rubber (Column 5 lines 23-24) . Strumbos does not disclose an inlet section having a convergent cross-sectional shape that connects the outer cylinder and the inner cylinder at the inlet side such that the fluid enters the nozzle regulator at the inlet section and flows into the fluid passageway. Strumbos does disclose the "Kort Nozzles" and how they are a very well known prior art (Column 1, lines 55-70), Kort Nozzles have convergent cross-sectional shape. At the time of invention it would have been obvious to one of ordinary skill in the art to have an inlet section having a convergent cross-sectional shape that connects the outer cylinder and the inner cylinder at the inlet side such that the fluid enters the nozzle regulator at the inlet section and flows into the fluid passageway, for the purpose of regulating the fluid flow at a constant rate irrespective of the amount of fluid flowing through the tube

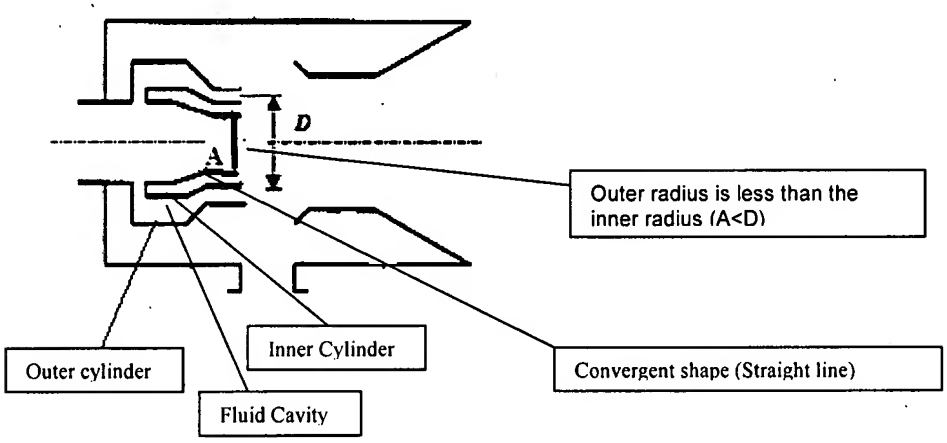
With regard to Claim 20 Strumbos discloses a method for automatically adjusting an output area of a deformable nozzle regulator (It is explained in Column 6 second paragraph), an inlet side and an outlet side such that fluid flows through the deformable nozzle regulator from the inlet side to the outlet side and exits at an output nozzle (Figure 5), comprising: generating a backpressure of the fluid at the deformable nozzle regulator; constricting the output nozzle using the backpressure to reduce an output area of the output nozzle; and decreasing the backpressure to allow the output area to return to its original size (Bernoulli's principle). Strumbos also explains the working of the nozzle regulator by using the backpressure generated by the fluid that governs the area of the output nozzle. It would have been obvious to one of ordinary skill in the art at

the time the invention was made to use Bernoulli's principle to regulate the fluid flow through the regulator for the purposes of wisely using the energy from the fluid.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tash et al. (US Patent number 4,963,073) in view of W. P. Strumbos (US Patent number 3,605,672).

Tash discloses an outlet side regulated venturi pump 10 for pumping fluid, comprising: primary inlet that receives a fluid pressure source 14 such that fluid under pressure flow from the fluid pressure source to the primary inlet; a venturi throat 22 in fluid communication with the primary inlet 14 that decelerates the fluid flowing from the primary inlet and creates a low-pressure area at the venturi throat (Shown in Figure 4); a secondary inlet in fluid communication with the venturi throat that allows a fluid being pumped to be drawn through the secondary inlet into the venturi throat by the low-pressure area. Tash does not disclose an automatically deformable nozzle regulator having in fluid communication with the venturi throat that automatically adjusts its output area to further decrease pressure at the venturi throat. Strumbos discloses an automatically deformable nozzle regulator 10. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Tash et al. over Strumbos to design a regulated venturi pump that is easy to operate and does not require any external energy sources and is also very cost efficient because of its simple design.

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being obvious over Popov Serguei A. (US Patent number 6,250,890) in view of Blackshear et al. (US Patent number 3,667,069).

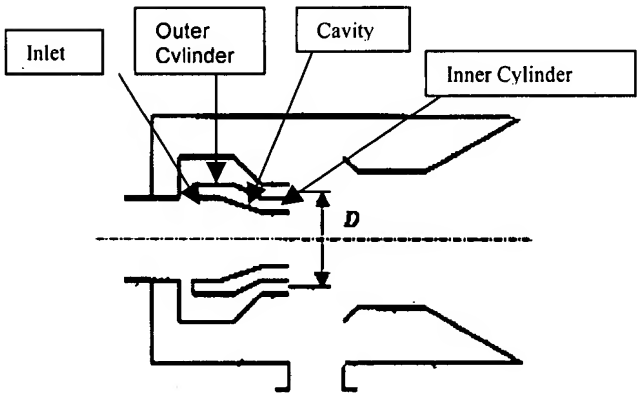


(Figure 1: First Interpretation)

The first or second interpretation of Popov, as shown below in the figure 1, Popov discloses a nozzle regulator, comprising: an outer tubular cylinder having a first radius; an inner tubular cylinder having a second radius that is less than the first radius and wherein the outer tubular cylinder and the inner tubular cylinder are concentric about a longitudinal direction, an inlet section that connects the outer tubular cylinder and the inner tubular cylinder at an inlet side in the longitudinal direction; wherein the inlet section is a ring having a convergent cross-sectional shape in the longitudinal direction such that the outer tubular cylinder and the inner tubular cylinder are smoothly connected; wherein the convergent cross-sectional shape is a straight line. Popov discloses automatically deformable nozzle regulator, comprising: an outer cylinder having a hollow interior and an inlet side and a outlet side at opposite end of the

cylinder along a longitudinal direction; an inner cylinder disposed concentrically within the outer cylinder and having a fluid passageway in the longitudinal direction such that fluid can flow through the fluid passageway from the inlet side to the outlet side; and an inlet section having a convergent cross-sectional shape that connects the outer cylinder and the inner cylinder at the inlet side such that the fluid enters the nozzle regulator at the inlet section and flows into the fluid passageway; further comprising a nozzle regulator cavity bounded by the outer cylinder, the inner cylinder and the inlet section such that the inlet side of the nozzle regulator cavity is sealed and the outlet side of the nozzle regulator cavity is open so that fluid can only flow into the nozzle regulator cavity from the outlet side. Popov does not discloses that the inner tubular cylinder is made of a deformable material; wherein the deformable material comprises a rubber compound and also that the entire nozzle regulator is constructed of the deformable material. Blackshear et al. discloses a pump that is made of a deformable material and also it is entirely made out of the said material (Column 5, lines 42-45). At the time of invention it would have been obvious to one skilled in the art to make the entire nozzle regulator of deformable material for the purposes of efficiently controlling the fluid flow by using a deformable nozzle that is simple and durable. Popov does not discloses that the automatically deformable nozzle regulator is constructed of a deformable material, neither does he provides teachings of backpressure in the fluid within the nozzle regulator cavity generates a constricting force that causes a radius of the inner cylinder to decrease. Blackshear et al. discloses a pump that is made of a deformable material (Column 5, lines 42-45) and also provide teachings for the backpressure in the fluid

within the nozzle regulator (Column 2 lines 10-25). At the time of invention it would have been obvious to one skilled in the art to make the nozzle regulator of deformable material, as it is available in numerous varieties to suit the needs for flexibility and strength. The regulator made out of deformable material will also be elastically stronger.



(Figure 2: Second interpretation)

Using second interpretation as shown in Figure 2 below, Popov discloses an outlet nozzle formed by the offset of the inner tubular cylinder from the outer tubular cylinder to an outlet side opposite the inlet side of the nozzle regulator such that the output nozzle projects from the outer tubular cylinder. Popov further discloses cavity formed by a junction of the outer tubular cylinder, the inner tubular cylinder, and the inlet section. It is also clear from the figure that the cavity is bounded by the outer cylinder, the inner cylinder and the inlet section such that the inlet side of the nozzle regulator cavity is sealed and the outlet side of the nozzle regulator cavity is open so that fluid can only flow into the nozzle regulator cavity from the outlet side; wherein output nozzle

projecting from the outlet side of the outer cylinder and being part of the inner cylinder such that a surface area of the output nozzle is capable of being in contact with the fluid. Popov also discloses an automatically deformable nozzle regulator further comprises: an outer tubular cylinder and an inner tubular cylinder concentrically arranged; an inlet section joining the cylinders at an inlet side of nozzle regulator; wherein nozzle regulator further comprises an output nozzle projecting from an outlet side of the automatically deformable nozzle regulator; wherein the inlet section has a convergent cross-sectional shape being one of: (a) a convex curve; (b) a straight line; wherein cavity is disposed between the concentric cylinders and bounded on the inlet side by the inlet section and open on the outlet side.

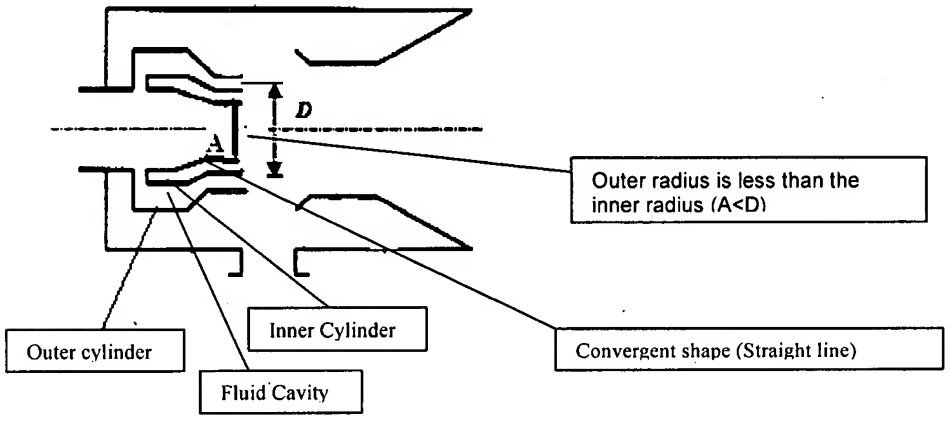
(10) Response to Argument

With regard to applicant's argument with respect to claim 1 , regarding automatic, that Strumbos does not teach automatic inflation and deflation; it should be noted that automatic means a **machine operating without human intervention**: a machine that **controls its own operating process**. Applicant has correctly stated that Strumbos teaches "**a controlled inflation and deflation of the inflatable sector members**" (refer to column 5, Lines 50-52) where the control is accomplished by a "fluid circuit" which works in conjunction with a "distributing valve" and "supply conduits" which are attached between the distributing valve and each sector member. (refer to column 5, Lines 52-58 and FIG. 2) Strumbos further teaches that the "distributing valve can be in

operational connection with the helmsman's steering control or the valve can be integrated into the craft's autopilot or automatic steering system." (refer to column 5, Lines 59-62) Thus, as explained above, Strumbos does teach automatic inflation and deflation of the sector members.

With regard to applicant's argument with respect to claim 3, deformable material, the inner tubular cylinder is made of a deformable material (...fabricated from a natural rubber or rubber like material... Column 5 lines 23-24) such that when acted upon by a force the inner tubular cylinder easily deforms but when the force is removed the inner tubular cylinder returns to its original shape (Column 5, lines 24-29); and an inlet section that connects the outer tubular cylinder and the inner tubular cylinder at an inlet side in the longitudinal direction (Shown in Figure 5, the arrow indicates the direction of flow of the fluid); wherein the deformable material comprises a rubber compound (Column 5 lines 23-24); wherein the entire nozzle regulator is constructed of the deformable material (42 Figure 3 and 5).

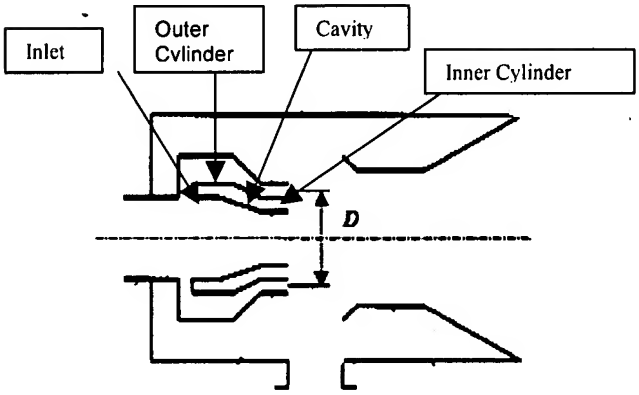
With regard to applicant's argument with respect to claim 1, 3, 9-16 and 19, constructed entirely of deformable material,



(Figure 1: First Interpretation)

The first or second interpretation of Popov, as shown below in the figure 1, Popov discloses a nozzle regulator, comprising: an outer tubular cylinder having a first radius; an inner tubular cylinder having a second radius that is less than the first radius and wherein the outer tubular cylinder and the inner tubular cylinder are concentric about a longitudinal direction, an inlet section that connects the outer tubular cylinder and the inner tubular cylinder at an inlet side in the longitudinal direction; wherein the inlet section is a ring having a convergent cross-sectional shape in the longitudinal direction such that the outer tubular cylinder and the inner tubular cylinder are smoothly connected; wherein the convergent cross-sectional shape is a straight line. Popov discloses automatically deformable nozzle regulator, comprising: an outer cylinder having a hollow interior and an inlet side and a outlet side at opposite end of the cylinder along a longitudinal direction; an inner cylinder disposed concentrically within the outer cylinder and having a fluid passageway in the longitudinal direction such that fluid can flow through the fluid passageway from the inlet side to the outlet side; and an inlet section having a convergent cross-sectional shape that connects the outer cylinder and the inner cylinder at the inlet side such that the fluid enters the nozzle regulator at the inlet section and flows into the fluid passageway; further comprising a nozzle regulator cavity bounded by the outer cylinder, the inner cylinder and the inlet section such that the inlet side of the nozzle regulator cavity is sealed and the outlet side of the nozzle regulator cavity is open so that fluid can only flow into the nozzle regulator cavity from the outlet side. Popov does not discloses that the inner tubular cylinder is made of

a deformable material; wherein the deformable material comprises a rubber compound and also that the entire nozzle regulator is constructed of the deformable material. Blackshear et al. discloses a pump that is made of a deformable material and also it is entirely made out of the said material (Column 5, lines 42-45). At the time of invention it would have been obvious to one skilled in the art to make the entire nozzle regulator of deformable material for the purposes of efficiently controlling the fluid flow by using a deformable nozzle that is simple and durable. Popov does not discloses that the automatically deformable nozzle regulator is constructed of a deformable material, neither does he provides teachings of backpressure in the fluid within the nozzle regulator cavity generates a constricting force that causes a radius of the inner cylinder to decrease. Blackshear et al. discloses a pump that is made of a deformable material (Column 5, lines 42-45) and also provide teachings for the backpressure in the fluid within the nozzle regulator (Column 2 lines 10-25). At the time of invention it would have been obvious to one skilled in the art to make the nozzle regulator of deformable material, as it is available in numerous varieties to suit the needs for flexibility and strength. The regulator made out of deformable material will also be elastically stronger.



(Figure 2: Second interpretation)

Using second interpretation as shown in Figure 2 below, Popov discloses an outlet nozzle formed by the offset of the inner tubular cylinder from the outer tubular cylinder to an outlet side opposite the inlet side of the nozzle regulator such that the output nozzle projects from the outer tubular cylinder. Popov further discloses cavity formed by a junction of the outer tubular cylinder, the inner tubular cylinder, and the inlet section. It is also clear from the figure that the cavity is bounded by the outer cylinder, the inner cylinder and the inlet section such that the inlet side of the nozzle regulator cavity is sealed and the outlet side of the nozzle regulator cavity is open so that fluid can only flow into the nozzle regulator cavity from the outlet side; wherein output nozzle projecting from the outlet side of the outer cylinder and being part of the inner cylinder such that a surface area of the output nozzle is capable of being in contact with the fluid. Popov also discloses an automatically deformable nozzle regulator further comprises: an outer tubular cylinder and an inner tubular cylinder concentrically arranged; an inlet section joining the cylinders at an inlet side of nozzle regulator; wherein nozzle regulator further comprises an output nozzle projecting from an outlet

side of the automatically deformable nozzle regulator; wherein the inlet section has a convergent cross-sectional shape being one of: (a) a convex curve; (b) a straight line; wherein cavity is disposed between the concentric cylinders and bounded on the inlet side by the inlet section and open on the outlet side.

With regard to applicant's argument with respect to claim 15, Tash discloses an outlet side regulated venturi pump 10 for pumping fluid, comprising: primary inlet that receives a fluid pressure source 14 such that fluid under pressure flow from the fluid pressure source to the primary inlet; a venturi throat 22 in fluid communication with the primary inlet 14 that decelerates the fluid flowing from the primary inlet and creates a low-pressure area at the venturi throat (Shown in Figure 4); a secondary inlet in fluid communication with the venturi throat that allows a fluid being pumped to be drawn through the secondary inlet into the venturi throat by the low-pressure area. Tash does not disclose an automatically deformable nozzle regulator having in fluid communication with the venturi throat that automatically adjusts its output area to further decrease pressure at the venturi throat. Strumbos discloses an automatically deformable nozzle regulator 10. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Tash et al. over Strumbos to design a regulated venturi pump that is easy to operate and does not require any external energy sources and is also very cost efficient because of its simple design.

With regard to applicant's argument, regarding nozzle, that Strumbos does not teach a nozzle; it should be noted that a nozzle is a narrow or tapering part at the end of

a tube or pipe, used to direct or control the flow of a liquid or gas and the applicant is correct in his understanding of nozzle. Strumbos does disclose a nozzle as Shown in Figure 3, 5, 11 and 15 as it has a tapering part at the end and it controls fluid (air).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Vikansha

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